

Paper Title

Space Station Integrated Kinetic Launcher for Orbital Payload Systems (SSIKLOPS) – Cyclops

Abstract

Access to space for satellites in the 50-100 kg class is a challenge for the small satellite community. Rideshare opportunities are limited and costly, and the small sat must adhere to the primary payloads schedule and launch needs. Launching as an auxiliary payload on an Expendable Launch Vehicle presents many technical, environmental, and logistical challenges to the small satellite community. To assist the community in mitigating these challenges and in order to provide the community with greater access to space for 50-100 kg satellites, the NASA International Space Station (ISS) and Engineering communities in collaboration with the Department of Defense (DOD) Space Test Program (STP) is developing a dedicated 50-100 kg class ISS small satellite deployment system. The system, known as Cyclops, will utilize NASA's ISS resupply vehicles to launch small sats to the ISS in a controlled pressurized environment in soft stow bags. The satellites will then be processed through the ISS pressurized environment by the astronaut crew allowing satellite system diagnostics prior to orbit insertion. Orbit insertion is achieved through use of the Japan Aerospace Exploration Agency's Experiment Module Robotic Airlock (JEM Airlock) and one of the ISS Robotic Arms. Cyclops' initial satellite deployment demonstration of DOD STP's SpinSat and UT/TAMU's Lonestar satellites will be toward the end of 2013 or beginning of 2014. Cyclops will be housed on-board the ISS and used throughout its lifetime. The anatomy of Cyclops, its concept of operations for satellite deployment, and its satellite interfaces and requirements will be addressed further in this paper.